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Arthrotaeniolella aquatica gen. & sp. nov. and *Pseudospiropes piatanensis* sp. nov. from Brazil

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Abstract—A new genus and species, *Arthrotaeniolella aquatica*, and a new species, *Pseudospiropes piatanensis*, collected on submerged decaying plant materials in the Brazilian semiarid region, are described and illustrated. *Arthrotaeniolella aquatica* is characterized by distinct, sinuate, slender, branched, hyaline or subhyaline to pale dirty brown conidiophores that produce cylindrical to sub-oblong, unicellular to euseptate, dark brown conidia formed by thallic-arthric disarticulation of the branches. *Pseudospiropes piatanensis* is distinguished by a polyblastic conidiogenous cell that produces fusiform to lunate, 10–15-distoseptate, pale brown conidia.

Key words—*Ascomycota*, hyphomycetes, taxonomy, tropics

Introduction

The Brazilian semiarid region, located in the northeast of the country, covers approximately 900,000 km^2 and has high biodiversity (Giulietti et al. 2006). Its different vegetation types have favored a great diversity of microfungi with the presence of several new species (e.g., Barbosa et al. 2013, Silva & Gusmão 2013, Almeida et al. 2014, Silva et al. 2014, Monteiro et al. 2016). During continuing mycological surveys of microfungi from this region, two interesting hyphomycetes were collected on decaying plant materials submerged in a stream. Close examination of their morphological

characteristics revealed that one clearly belongs to the genus *Pseudospiropes* M.B. Ellis (Ellis 1971). The other, which shows remarkable differences from all previously described hyphomycetes (Seifert et al. 2011), required the erection of a new genus, *Arthrotaeniolella*.

Materials & methods

Samples of submerged litter were placed in plastic bags, taken to the laboratory, placed in Petri dish moist chambers, and stored in a 170 L polystyrene box with 200 mL water plus 2 mL glycerol at room temperature for 30 days (Castañeda-Ruiz et al. 2016). Mounts were prepared in PVL (polyvinyl alcohol, lactic acid, and phenol) and measurements were made at a magnification of ×1000. Microphotographs were obtained with an Olympus BX51 microscope equipped with bright field and Nomarski interference optics. The type specimens are deposited in the Herbarium of Universidade Estadual de Feira de Santana, Bahia, Brazil (HUEFS).

Taxonomy

Arthrotaeniolella L.B. Conc., M.F.O. Marques, J.S. Monteiro, Gusmão & R.F. Castañeda, **gen. nov.**

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Differs from *Taeniolella* by its production of conidia by thallic-arthric disarticulation of conidiophore branches.

Type Species: *Arthrotaeniolella aquatica* L.B. Conc. et al.

Etymology: Greek, *arthro-*, meaning jointed, referring to the arthric-thallic conidia formed by breaking up fertile branches at the septa; *-taeniolella*, referring to the genus *Taeniolella*.

Conidiophores macronematous, mononematous, branched, septate, subhyaline or pigmented. Conidiogenous hyphae holothallic, pigmented. Conidial secession schizolytic. Conidia solitary, cylindrical to sub-oblong, unicellular or euseptate, dark pigmented, formed by disarticulation of the conidiogenous branches.

Arthrotaeniolella aquatica L.B. Conc., M.F.O. Marques, J.S. Monteiro, Gusmão & R.F. Castañeda, **sp. nov.** Fig. 1

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Differs from *Taeniolella rudis* by its alternately arranged branches conidiophores and its random thallic-arthric conidial ontogeny

Type: Brazil, Bahia State, Pindobaçu, Serra da Fumaça, 40°21′W 10°39′S, on submerged decaying leaves and twigs of unidentified plant in a stream, 26.July 2016, coll. L.B. Conceição (**Holotype**, HUEFS 224988).

Etymology: Latin, *aquatica,* referring to its growing in water.

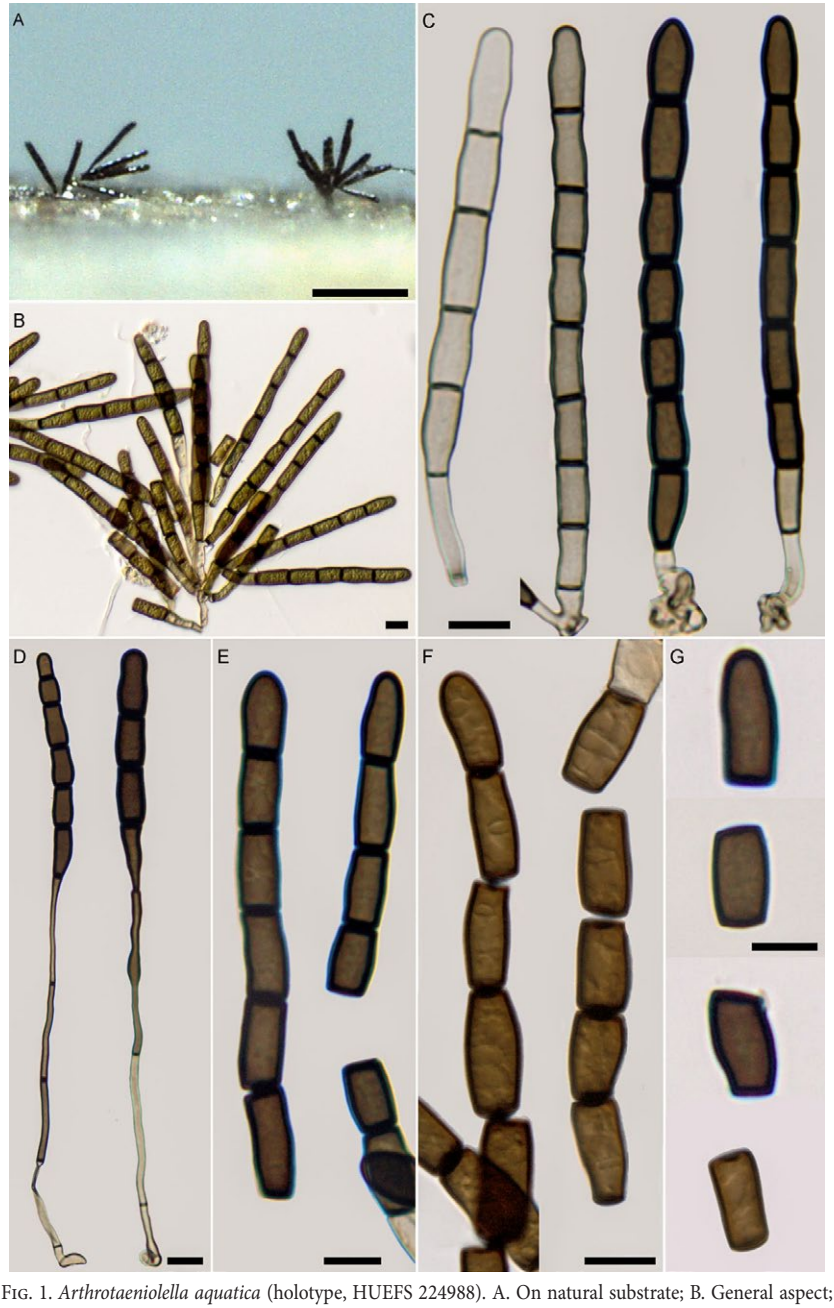

Fig. 1. *Arthrotaeniolella aquatica* (holotype, HUEFS 224988). A. On natural substrate; B. General aspect; C, D. Conidia; E, F. Disarticulating conidia. G. Disarticulated conidia. Scale bars: A = 100 µm; B–G = 10 µm.

Colonies on natural substrate effuse, hairy, brown. Mycelium mostly superficial, hyphae branched, septate, 1–2 µm diam., smooth, subhyaline to pale dirty brown. Conidiophores macronematous, mononematous, slender, erect, flexuous or straight, subhyaline or pale dirty brown, 55–250 × 6–9 µm; sometimes unbranched but mostly with dark dirty brown, 4–7-septate, 40–80 µm long branches, alternately arranged toward the apex Conidiogenous hyphae holothallic, branches and differentiated apical region of the unbranched conidiophores cylindrical to long clavate, mostly discrete, sometimes integrated, dark dirty brown. Conidia cylindrical, sub-oblong, truncated at the ends, occasionally rounded at the apex, 0–4-septate, 8–35(–40) × 3–9 µm, dark dirty brown, dry, smooth, forming by random thallic-arthric disarticulation at the septa of the conidiogenous hyphae.

Note: *Taeniolella* S. Hughes is characterized by conidiophores that are little differentiated from hyphae, usually short, unbranched or sparingly branched near the base and conidiogenous cells that are monoblastic, integrated, terminal, cylindrical or doliiform and that produce conidia that are solitary or in branched acropetal chains, 1 or more septate, often seceding with difficulty, cylindrical, dark brown (Hughes 1958, Ellis 1971, Seifert et al. 2011). In *T. rudis* (Sacc.) S. Hughes the conidial chains are broken up by disarticulation (Jones et al. 2002; Seifert et al. 2011). In *Arthrotaeniolella* the conidiogenous events occurring in the branches and hyphae are classified as conidial development type 38 (conidial ontogeny holothallic, conidiogenous cells formed by apical wall-building coincident with conidial ontogeny, random delimitation by 1 septum at each end, no maturation during conidiogenesis, secession randomly schizolytic) in Kirk et al. (2008), which is different from the blastic conidial ontogeny in *Taeniolella*.

Two other genera illustrated by Seifert et al. (2011)—*Ampulliferina* B. Sutton and *Thielaviopsis* Went—have similar thallic-arthric conidial development in the branches. In *Ampulliferina* the superficial hyphae are hyphopodiate, with lateral, globose, clavate, rarely lobate, brown hyphopodia (Sutton 1969, Seifert et al. 2011). In *Thielaviopsis* the thallic-arthric development is restricted to the chlamydospores-like branches, which are distinguished by the production of unicellular or septate, dark brown arthroconidia with a germ slit or pore (Seifert et al. 2011).

Fig. 2. *Pseudospiropes piatanensis* (holotype, HUEFS 211342). A. Conidia; B–D. Conidiophores; E. Detail of conidiogenous cell; F. Conidiogenous cell and conidia. Scale bars = 10 µm.

Pseudospiropes piatanensis J.S. Monteiro, Gusmão & R.F. Castañeda, **sp. nov.** Fig. 2

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Differs from *Pseudospiropes mussaendae* and *P. ximeniae* by its 10–15-distoseptate fusiform to lunate conidia.

Type: Brazil, Bahia State: Piatã, Rio Coxó, 13°00′S 41°53′W, on submerged decaying wood in a stream, 9 May 2014, coll. J.S. Monteiro (**Holotype**, HUEFS 211342).

Etymology: *piatanensis*, referring to the City of Piatã where the type was found.

Colonies on natural substrate effuse, hairy, brown. Mycelium mostly immersed, hyphae branched, septate, smooth, pale brown, 1–2 µm diam. Conidiophores macronematous, mononematous, single, simple, erect, straight or slightly flexuous, septate, smooth, dark brown, pale brown toward the apex, 82.5–87.5 × 4–5 µm. Conidiogenous cells holoblastic, polyblastic, indeterminate, integrated, terminal (becoming intercalary), sympodial, cylindrical, smooth, pale brown, 27.5–52.5 × 6–7.5 µm. Conidiogenous loci enlarged, thickened, protuberant, melanized, lenticular. Conidial secession schizolytic. Conidia solitary, acropleurogenous, fusiform to lunate, 10–15-distoseptate, smooth, pale brown, 57.5–72.5 × 10–16 µm, 2.5–3 µm diam. at the truncate base.

Additional specimen examined: **BRAZIL**, **Bahia**: **Piatã, Rio Coxó,** 13°00′S 41°53′W, on submerged decaying wood in a stream, 9 May 2014, coll. J.S. Monteiro (HUEFS 211343).

Note: *Pseudospiropes* is distinguished by solitary, acropleurogenous, distoseptate conidia seceding schizolytically from polyblastic, sympodial, cicatrized conidiogenous cells with enlarged, thickened, protuberant and melanized conidiogenous loci (Ellis 1971, Castañeda-Ruiz et al. 2001, Seifert et al. 2011). The 17 species currently included in this genus are delimited by conidial shape, size, number of septa, and pigmentation (Castañeda et al. 2001, Ma et al. 2011). Among *Pseudospiropes* species, only *P. mussaendae* Z.Q. Shang & X.G. Zhang and *P. ximeniae* Z.Q. Shang & X.G. Zhang have conidia similar to those of *P. piatanensis*. However, the conidia of *P. piatanensis* have more distosepta and are longer than those of *P. mussaendae* (conidia 36–47 × 9–11 µm, 8–9-distoseptate) and *P. ximeniae* (conidia 34–40 × 12–14 µm, 6–8-distoseptate). In addition, the conidia of *P. piatanensis* are fusiform to lunate, while those of *P. mussaendae* are fusiform to obclavate and those of *P. ximeniae* fusiform to navicular (Shang & Zhang 2007).

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